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SKETCHES OF THE PENINSULA.—No. X.

BADAJOZ.

[Castle of Badajoz.]

THE city of Badajoz forms an object of great interest to an Englishman, inasmuch as it is connected with the military successes of his country. Though the walls are kept in perfect repair, the breach by which the British soldiers entered is distinctly visible from the different colour of the stone employed in its restoration: additional works have been thrown up since, to strengthen what experience has shown to have been a weak point. The castle, however, (of which our cut is a representation, taken from the spot where the British entered under General Picton,) presents but a heap of ruins—the habitation of desolation. Many years have passed since the thunder of the cannon laid the pride of this tower of strength with the dust, since the voice of Picton cheered his bands to victory; and yet how little has been changed!—not a stone has been removed; not a stone has been added: the Moorish towers remain in the same shattered condition; the crumbling wall and broken arch, unheeded, unrepaired.

An old Spaniard, who had been present at the siege, walked over the castle with us, and gave a double interest to the scene by his animated descriptions. "Here, señor," said he, pointing to a spot in the fosse, hollowed by the sinking in of some body under the surface, "lie buried 8000 British, French, and Spaniards; friend and foe, señor, there they lie;" and, he added, in the emphatical manner of his country, "God rest their souls!" We could not resist the temptation of descending into this Golgotha: the ground was strewed with fragments of what once were men.

Badajoz is situated on an eminence which, gradually sloping upwards from the plain, terminates rather precipitously at the castle. This hill terminates the range of the mountains of Toledo, although separated from the chain by the "dark Guadiana," whose waters flow beneath the city walls. Fort St. Christobal, a strong fort on the Portuguese side of the river, and completely commanding the town, is, more properly speaking, the last of the Toledo mountains, as the eminence on which the city stands does not deserve so dignified a name. Badajoz is completely surrounded on three sides by a vast plain, and on the fourth by the river. This plain was once covered with the vine and the olive, and the picturesque Casas del Campo of the more wealthy inhabitants; but now it presents but a wide and dreary desert; war, with its desolating blasts, has swept cultivation from the soil; has converted the sickle into the sword, and the ploughshare into a spear.

The bridge of Badajoz is a beautiful remain of Roman architecture, and its perfect and solid masonry attest the greatness of that surprising people in their works of art. Much is added to its appearance by the Tête de Pont, on the Campo side, and the fine towers of the Puerta de los Palmas, on the city side. In the centre,

a fountain of living water casts its refreshing showers high into the sultry air, and the beauty of the prospect on every hand renders the Ponte de Badajoz a pleasant promenade for the fair or idle. The river beneath is so shallow in the summer months as to be fordable almost at every part; but in the winter it becomes a mighty stream, pouring its waters along with resistless rapidity, and entirely filling the wide channel cut in the loose soil by its ceaseless flow. Navigation, therefore, is not to be thought of, and the only vessels to be seen are a few small boats for pleasure or for fishing.

The Palmer's Gate is well worthy of notice on account of its extreme beauty; the two round towers which stand on either hand are perfectly symmetrical; and the golden hue of age thrown over the white marble of which they are built by the fine pure atmosphere of a southern climate, increases the beauty of their appearance by lending the charms of colour to those of form. This gate, which is also Roman, was repaired by Philip II., the husband of our Queen Mary, in the year 1551, as appears by the inscription, since which time the hand of the workman has not touched it. The bridge, however, of which this gate forms the termination, has been thoroughly repaired and paved. The interior of the town presents nothing remarkable, although extremely clean without the aid of white-wash, so much used in Portugal to give an air of cleanliness to the antiquated and miserable streets. The houses are for the most part large and commodious, and the inn, or Fonda de los Cuatra Naciones, is superlative in its accommodation and comfort; indeed, it is surprising to find so splendid an establishment in Badajoz, after becoming accustomed to the wretched, comfortless, and dirty inns, hotels, hospederios, or whatever they may call them, in Portugal. The market-place near the castle is a fine square, and contains the government offices, &c.; the buildings are extremely picturesque, and are overlooked by some old towers and ruins, forming an interesting background. The street which leads from this place to the cathedral is filled with the houses of the gentry, and its termination forms the Rambla, or public walk, where the belles of the place display themselves in the evening air. The cathedral, whose Gothic arches and massive tower overlook this promenade, is a plain and ugly building externally, but every art and expense have been lavished to render its interior magnificent and glittering. The numerous chapels which surround its broad and gloomy aisles are covered with carvings and gilt-work; the altars are enriched by embroidery of the most costly workmanship, and resplendent with silver candlesticks and wax candles kept constantly lighted; and the grand altar displays all the art and splendour of the Catholic worship.

ON THE CULTURE OF WHEAT WITHIN THE TROPICS.

It has not been among the least of the evils resulting from the system hitherto pursued in our West Indian settlements, that it had a direct tendency to restrict the industry of the planters exclusively to those objects which created the greatest demand for human labour within the colonies, and commanded the readiest sale in other countries. The consequence of this exclusive attention to one or two objects of cultivation, calculated chiefly for foreign consumption, was a total neglect of those articles which were in every-day demand for the home market, and for which the inhabitants were thus rendered dependent upon other countries, and more especially upon the United States of North America. Among the objects the want of an internal supply of which has been at various times severely felt, few rank higher than wheat and the other cerealia, against the culture of which, although tried with success soon after the Spanish conquest, and although remnants of that success are still to be found, not only in various parts of the continent of America within the tropics, but even at a level little exceeding that of the sea in the island of Cuba, but little farther north than our own island of Jamaica, an unreasonable prejudice has prevailed in the minds of the planters, which no effort has been made to combat by the test of experience till within the last few years, when experiments made with the celebrated wheat of La Victoria, in the province of Caraccas, kindly supplied for the purpose by Sir Robert Kerr Porter, were first tried with the most triumphant success at elevations of from 2000 to 4000 feet above the level of the sea, in the island of Jamaica, under the auspices of Dr. Bancroft, the president of the Agricultural Society there, in the years 1834 and 1835; and still more lately, and with a still more striking success, at a level of only four feet above the sea, in the island of New Providence, under the auspices of the governor, Colonel Colebrooke, and Mr. Lees, the energetic and indefatigable secretary of the society recently established in the Bahama Islands for the Diffusion of Knowledge. Dr. Bancroft's account of the experiments made in Jamaica has already been published in the 'West of England Journal of Science and Literature,' for the years 1835 and 1836, p. 229; but as that work is not perhaps in the hands of many who are readers of this magazine, it may not be amiss to transcribe that part of the paper here for the purpose of giving it a wider circulation. Dr. Bancroft, speaking of the Victoria wheat, in his letter of the 9th July, 1835, writes as follows:—"Victoria wheat: the Jamaica Society have received samples from three or four different places of the wheat produced there, all of which appear to be of a favourable sort.

"First, from the mountains of St. Anne's, where the seed had been sown the latter end of January, and the corn was ripe the latter end of April. In another part of the same district, the dates of sowing differed from the above, but the wheat ripened in nearly the same period.

"Next, from the mountains of St. Andrews. On one property, Fair Hill, (about 2000 feet above the sea) the sowing and ripening happened at the same dates as in the first-mentioned case. Of this corn one grain produced twenty-eight ears, containing altogether 1500 grains (being an average of fifty-eight grains for each ear). Notwithstanding this apparent success, the proprietor thinks it unlikely that planters would grow the Victoria wheat in preference to the "great corn," as it is called here, i. e., zea mayz.

"On another plantation, again, Charlottenberg (about 4000 feet above the level of the sea), the seed was sown early in March, and received a top-dressing; in the course of a few days it had already sprung up three inches above ground; and, as favourable moderate rains continued to fall subsequently, the corn throve well, and ripened in the early part of June, producing abundantly grain of a larger size than the parent seed, the ears being large and full. Six of these, for instance, yielded 336 grains, weighing three ounces; making an average of fifty-six grains, weighing half an ounce, to each ear. Mr. W. B. King, an assistant judge of assize, and member of Assembly, has sent me two bundles of the ears of his wheat, and I intend to enclose one or two of them as a specimen of the produce of the Victoria wheat here. From the trial just made, Mr. King has no doubt that this grain could be cultivated in many parts of this island, and that it might become a profitable resource."

Such was the result of the first successful attempt perhaps ever made in a British island in the West Indies to cultivate this valuable grain; and yet, such

was the force of long-cherished prejudices that, notwithstanding the enormous return of 1500 for 1, which we find was obtained at Fair Hill, and notwithstanding the shortness of the interval between sowing and reaping, which in no instance appears to have exceeded ninety days, we learn from Dr. Bancroft that the proprietor of that estate did not think it likely that the planters would prefer this crop to Indian corn, the common food of the blacks, although rarely eaten by the whites, except on occasions of scarcity. There can be little doubt that much of the success of this first trial is attributable to the circumstance of its having been made with a grain acclimated by the cultivation of two centuries within the tropics; since, as will be seen by the report of the experiments tried in the Bahama Islands with Caraccas and English wheat, that while the productiveness of the former is increased by its approach to a lower level and a hotter climate, the latter proved nearly a total failure. The following report of these experiments is transcribed from the tenth number of the 'Journal of the Bahama Society for the Diffusion of Knowledge' for the month of March, 1836:—

"WHEAT.

"The following descriptions of wheat were planted on the 1st of November, in the garden attached to the government house, Nassau, New Providence:—

"DESCRIPTION.

No. 1. English white wheat—fourteen grains of which are come up, but not yet in ear.

No. 3. Victoria wheat, English growth, raised from Caraccas seed—six grains, all came up, and have produced sixty-two stalks in ear, which are now ripening.

No. 4. Red wheat—came up, and have produced six stalks, but not yet in ear.

"ACCOUNT OF THE WHEAT PLANTED AT THE SAME TIME BY MR. STORR.

No. 1. English white wheat—not come up.

No. 2. Victoria wheat from Caraccas—each grain has produced from fifty to sixty ears; each ear containing from seventy to eighty grains. (An increase of from 3508 to 4800 for one.)

No. 3. Victoria wheat, of English growth, raised from Caraccas seed—same.

No. 4. Red wheat—has spread very much, having the appearance of grass, but has not yet (in four months) produced any stems."

In a former page of the same number (p. 120), detailing the proceedings of the Society at their monthly meeting on the evening of Friday the 12th of March, his Excellency the Lieutenant-governor in the chair, we find the following paragraph:—"Mr. Lees stated, that he had been informed by John Storr, Esq., that each grain of the Victoria wheat which he had planted would be likely to produce 100 ears: counting only the very moderate number of fifty grains to each ear, this would be an increase of 5000 per cent., or five thousand bushels for one. Mr. Storr intends, in the ensuing season, planting a quarter of an acre with this wheat, from which no doubt abundance of seed will be obtained."

The island of New Providence, in which these experiments were made, like all the rest of the countless islands of various magnitudes which stud the ocean for a space of more than five degrees of latitude and as many of longitude to the north of Cuba and Haiti, is utterly destitute of high land, and the level at which the wheat was raised does not exceed the altitude of four feet above the ocean. The mean temperature of the summer months, from May to October, is about eighty-seven degrees of Fahrenheit, the entire range hardly ever exceeding two or three degrees; while the atmospheric pressure varies in general so little, that a barometer is regarded as an unnecessary instrument in so equable a climate. The soil is of two descriptions, neither of them possessing a depth of more than two feet, in general, above the substratum of coral rock upon which it rests. One of these, celebrated for the fine and highly-prized pine-apples which it produces, is of a red colour, and is formed chiefly of decayed vegetable matter; which, although of singular fertility during the rainy season, becomes soon exhausted by exposure to the sun and wind, and in dry weather is so very fine and light, as to be frequently dissipated entirely by the action of the wind, leaving the rocky basis of the island naked and exposed. The other, a black vegetable mould, somewhat resembling the former, is, however, much inferior in point of fertility; it was in this soil the wheat was raised. Intermingled with both these, is a quantity of minutely pulverized madrepores, and other corallines, sea-shells, &c., which contribute little, if at all, to its fertility. Such a soil cannot be expected to be very retentive of moisture, and hence it cannot be a matter of surprise that much injury is frequently sustained from the want of rain. During the months of May and September, indeed, the rain descends in such impetuous torrents as to do scarcely less injury than the intermediate drought, carrying away the loose and yielding soil from every declivity with a force less capable of resistance even than the arid winds. On the cessation of the rains, the moisture rapidly exhales through the effects of evaporation, or is absorbed by the porous rock beneath, and everything of a vegetable nature, which is unable to subsist without moisture, or penetrates with its roots the pores and fissures of the subjacent rock, speedily perishes. Rivers of course cannot be looked for under such circumstances, and artificial irrigation is out of the question. It was, however, under circumstances thus unfavourable, under a temperature little, if at all, varying from that of islands more than ten degrees nearer to the line, at a level little exceeding that of the ocean, that the important results just detailed were obtained; and we are justified by these results in concluding that the results would be the same at the same level, but in more congenial soil, in Antigua, Barbadoes, Nevis, St. Kitt's, and the other islands, were the experiments tried with equal fairness, and the season for sowing selected with judgment. The advantage of securing an internal supply of so essential an article of human subsistence, not only to the population of the islands themselves, but even to the inhabitants of Great Britain, cannot fail to strike the most unobservant.

Alabaster.—It is not generally known that most of the alabaster with which we are supplied comes from the shores of the Bristol Channel, where, between the towns of Watchet and Minehead, are vast rocks of this elegant substance, presenting a most curious appearance, being intersected by differently coloured veins of quartz, mica, &c. It is justly regarded as the finest alabaster in the kingdom, and is much used in an adjacent manufactory for the making of various ornamental articles. Its base extends outwards into the sea for near 100 yards, and is covered with various kinds of sea-weed, which are taken up by the inhabitants, and prepared into an excellent edible dish, termed laver.

Minerals in Jamaica.—The expectations of the Spaniards, which appear to have been disappointed on the first discovery of Jamaica by Columbus, with respect to its mineral riches, appear to be on the eve of being realised, after an interval of more than three centuries, in our days; specimens of copper, gold, silver, lead, and iron ores, of great beauty and richness, having been received in this country from an estate in the vicinity of Kingston. The copper ore is said to yield fifty per cent. of pure metal, and hence appears to be the richest in the world: and a cargo of copper ore, shipped from an estate in the parish of St. George, sold as high as 40*l.* per ton. Besides this, a discovery of coal, of excellent quality, has also taken place, and promises to be of vast advantage to the inhabitants.

ANCIENT EGYPTIAN DEATH JUDGMENT

[*From the 'Pictorial Bible.'*]

[From a Drawing on one of the Sepulchral Papyrus Rolls.]

"Thou art weighed in the balances and art found wanting."—Daniel v. 27.

THE idea involved in this is sufficiently obvious in itself. But it is by no means impossible that the allusion received more force and meaning than we give to it from a reference to some opinion or custom common among the Babylonians. What that was, we cannot say precisely; but probabilities may be suggested by analogies derived from other sources. Thus the Egyptians entertained the belief that the actions of the dead were solemnly weighed in balances before Osiris, and that the condition of the departed was determined according to the preponderance of good or evil. Such judgment scenes are very frequently represented in the paintings and papyri of ancient Egypt, and one of them we have copied as a suitable illustration of the present subject. One of these scenes, as represented on the walls of a small temple at Dayr-el-Medeeneh, has been so well explained by Mr. Wilkinson, that we shall avail ourselves of his description; for although that to which it refers is somewhat different from the one which we have engraved, his account affords an adequate elucidation of all that ours contains. "Osiris, seated on his throne, awaits the arrival of those souls that are ushered into Amenti. The four genii stand before him on a lotus-blossom [ours has the lotus without the genii], the female Cerberus sits behind them, and Harpocrates on the crook of Osiris. Thoth, the god of letters, arrives in the presence of Osiris, bearing in his hand a tablet, on which the actions of the deceased are noted down, while Horus and Aroeris are employed in weighing the good deeds* of the judged against the ostrich feather, the symbol of truth and justice. A cynocephalus, the emblem of truth, is seated on the top of the balance. At length arrives the deceased, who appears between two figures of the goddess, and bears in his hand the symbol of truth,† indicating his meritorious actions, and his fitness for admission to the presence of Osiris."

If the Babylonians entertained a similar notion, the declaration of the prophet, "Thou art weighed in the balances and art found wanting" must have appeared exceedingly awful to them. But again, there are allusions in this declaration to some such custom of literally weighing the royal person, as is described in the following passage in the account of Sir Thomas Roe's embassy to the Great Mogul:—"The first of September, (which was the late Mogul's birthday,) he, retaining an ancient yearly custom, was, in the presence of his chief grandees, weighed in a balance: the ceremony was performed within his house, or tent, in a fair spacious room, whereinto none were admitted but by special leave. The scales in which he was thus weighed were plated with gold; and so was the beam, on which they hung by great chains, made likewise of that most precious metal. The king, sitting in one of them, was weighed first against silver coin, which immediately afterwards was distributed among the poor; then was he weighed against gold; after that against jewels (as they say), but I observed (being there present with my lord ambassador) that he was weighed against three several things, laid in silken bags in the contrary scale. When I saw him in the balance, I thought on Belshazzar, who was found too light. By his weight (of which his physicians yearly keep an exact account), they presume to guess of the present state of his body, of which they speak flatteringly, however they think it to be."

[Ancient Egyptian Scales.]

* "This M. Champollion supposes to be the heart. I still incline to the construction I have put upon it—a type of the good actions of the deceased."

† "Sometimes, instead of the ostrich-feather, the deceased bears a vase (which is placed in the other scale), and it has then a similar import."

RAMOOSSIES.

A WORK published in Bombay a few years ago, by Captain Mackintosh, of the Madras Army, affords a curious insight into the habits of the Ramoossies (one of the mixed castes of India), with which his duties often brought him in contact. The population of India is cut up into so many minute subdivisions by the institution of caste, that it is almost impossible, even for an inhabitant of the country, to be fully acquainted with all its ramifications. The limits of those divisions are so rigidly enforced, and the functions of each so strongly marked out, that it is often more a matter of circumstance than of inclination whether a man shall be a robber or a cultivator, a soldier or a merchant. The Ramoossies form one of the predatory tribes of India; and their supposed origin, as taken from an Indian work containing the genealogies of the mixed castes, will show the difficulty of an acquaintance with the detail of these divisions of society. It must be remembered that the pure castes are four only,—the Brahmans, the Cshatrias, the Vaisyas, and the

Sudras; and that all mixtures of these castes are unlawful, although Nature has many times forced the artificial barrier. The genealogy of the Ramoossies is thus deduced:—the offspring of a Sudra father and Brahman mother is called Chandal; that of a Chandal father and Cshatria mother is named Dombha. The child of a Sudra father and Vaisya mother is called Nishad; and that of a Nishad father and Sudra mother is named Pulkassy. The Ramoossy is the offspring of a Dombha father and Pulkassy mother.

The Ramoossies reside chiefly in the outskirts of towns and villages, in a portion of the Mahratta country extending 200 miles from north to south, and 100 from east to west. They are in number somewhat about 20,000. The bulk of this tribe appears, from time immemorial, to have led a roving life, residing as far as practicable from the more civilized inhabitants, and living by occasional robbery of such travellers as fell in their way, and by regular attacks on the houses in towns and villages near which their nocturnal marches carried them. The settled population found it advisable to purchase immunity from the assailants they were too feeble to oppose; and some of the tribe were willing to receive this sort of "black mail" as a price of protection from all robbers, as well of their own body as of any other. This practice originated the system of village watchmen, which in this part of India is entrusted to Ramoossy families, in whom the office has become hereditary.

The mode in which the system of Ramoossy watchmen were employed under the native governments, and which, with several modifications is still adopted in some places under the present rule, is sufficiently curious, and will furnish an illustration of the constitution of Indian society. Whenever a robbery had taken place, the Ramoossy watchman in charge of the village was immediately sent for by the authorities, and formally made responsible for the amount of the property lost. If the sum was not large enough to pay the expenses of seeking the robber, the watchman usually entered into an engagement to repay it within a certain time, and no further proceedings were taken: but in the case of a robbery to a large amount, measures were immediately taken for pursuit of the guilty. Early on the following morning, the Ramoossy watchman, attended by a few companions, proceeded to trace the footsteps of the robbers; at this they are singularly expert; the traces are soon found, twigs are torn from the adjoining trees, and cut to the size of the footmarks; as many separate measures are made as there appear to be different sized traces, and in this manner the number of a party is very nearly ascertained. When the traces were made out, and the measures cut to the proper sizes, the pursuers followed up the marks until they were led to the boundary of the next village: here the inhabitants were then called out, and the footmarks shown to them. As soon as they were convinced that the footmarks lead fairly within their own limits, the responsibility was taken from the watchman of the first village, and shifted to that of the village now entered: the measures were handed with formality to the new pursuers, and all the former ones returned to their own homes, with the exception of the original watchman and one companion, who continued the pursuit with each successive party to its conclusion. This method was followed up from village to village either until the robbers were taken, or until all traces were lost. In the event of the disappearance of the traces, the village within whose boundary this took place became responsible for the robbery, and means were taken by the watchman of the place to find the plunderers. Great sagacity was frequently displayed on these occasions. Ramoossy women and children were sent into the jungle under pretence of gathering firewood; but in reality to search the ravines or other lurking places where persons might be concealed. Others were sent into the adjoining villages to enter into conversation with the peasantry on indifferent matters, with the view of ascertaining whether any of the neighbours had been absent recently. A clue was often found by some similar means, and the robbers taken in consequence. With the capture of the guilty, the responsibility of the watchman ceased; but if, after all his endeavours, the search proved unsuccessful, he was called upon to reimburse the owner the amount of his lost property. In this case he commonly solicited the assistance of the village authorities, the inhabitants were compelled to subscribe a portion of the amount, and the case was made up with the owner, who was often glad to get back one half of the amount of his loss.

Such was, and with some modification, such is still the mode of procedure, when the Ramoossy watchmen are honest in their vocation. But this it seems is not often the case; they are accused of all kinds of theft, though chiefly of a petty nature, such as taking grain from the farm yards, or corn left in the fields, and the village officers are said to participate occasionally in the spoil. But with all its defects, the system is found to be useful; the Ramoossy police are considered effective, and English officers at Poonah engage these people as private watchmen to guard their houses at night.

But the greater part of the tribe live entirely by robbery; they have regularly organized bands, who are bound by strict rules, and joined together by oaths which they consider sacred. In robbing escorts or single travellers, they proceed much as the other predatory tribes in India, but when they attack houses, they have certain regulations which may be almost termed religious observances, from which they rarely depart. On approaching a village they carefully hide their shoes and the sheaths of their swords in the long grass, and then throw themselves into a supplicating posture, make repeated obeisances, and invoke the tutelary spirit of the place to favour their undertakings, and to crown their exertions with success, that they may obtain a valuable stock to maintain themselves and their wives and children for a long time. One of their party then takes off his turban, which is cut into three, five, or seven pieces, and moistened with ghee to serve as torches; a light is struck, the torches are kindled, and the village entered: the actual robbery is almost always effected by violence, and generally accompanied by the barbarities attending such scenes in India. If any of their party is killed, they are careful to remove the body to prevent discovery; or if they are hard pressed, cut off the head, and take it away with them; they are so apprehensive of discovery, that they will even cut off the head of any one who is so severely wounded as to be unable to make his escape, though not mortally. But they rarely come to this extremity: cunning is their usual weapon, and it is mostly successful. They are so very skilful in imitating the cries of the various wild animals which are so frequent in the neighbourhood of the native villages, that their occurrence excites no attention. When separated in flight, or divided for the purpose of a more effective attack, the whistling of birds and the howling of jackals form a sort of language of signals, by which their movements are known to each other, though unsuspected by those uninitiated. The cawing of crows is sometimes imitated very soon after midnight, to pretext the approach of morning, in order to induce sleeping travellers to rise and march before the hour that prudence would dictate; and in a country where clocks are unknown, many a traveller has been led by such means to set out hours before the usual time, lured to a secure spot, and there plundered.

In these expeditions gain is of course the chief motive;

and although violence is often practised, murder is rarely perpetrated; stories are told of their having suffered much from their unwillingness to imbrue their hands in blood. In former times they were less scrupulous, but even at the worst, they seldom murdered without the stimulus of revenge. In gratifying this passion, they rivalled the Children of the Mist; it was disgraceful to forgive an injury, and a parent on his death-bed accounted it a sacred duty to call together his children, to remind them of any insult which remained unatoned for, and to enjoin them not to let slip the first opportunity of vengeance. Their character at present is less dark, and they may be considered simply as bold reckless adventurers; their outrages are perpetrated with every precaution that prudence could suggest, but an inconceivable heedlessness succeeds, and the neglect of the most ordinary care is constantly visible in their actions, and leads to the detection of their robberies. The most usual way in which they are found out, is their making a foolish display of their stolen goods, or offering them for sale in some shop, generally in Poona, the very place where in all probability the article was originally purchased.

At one period, much trouble was occasioned to the British government by an insurrection of the Ramoossies under the conduct of a bold and able chief named Umiah, who in early life had taught himself to read and write, while in prison for a robbery. This was a very rare accomplishment for a Ramoossy, and the acquirement of knowledge under such circumstances is a proof of that energy of determination which procured him so great an influence over his tribe, who resisted the authorities, levied contributions on the country, made war against the government, and kept the whole territory in a state of disturbance, which was terminated only by the execution of Umiah in the year 1832. With this exception, the principal trouble with the Ramoossies is in their character of thieves; and the milder and more certain punishments inflicted by our government appear to have a better effect than the ferocious mutilations, and indiscriminate massacres of whole families, even to infants at the breast, in which the native powers indulged, when prisoners were too poor to buy themselves off. The punishment of death with most half-civilized people is little dreaded, but a lengthened imprisonment is much feared, and transportation is looked upon by the natives of India with great horror. Kalapani or the black water, by which they designate the ocean, is a term of dreadful import, and the place of transportation is figured as an island of a frightful description, full of wicked and malevolent beings, visible and invisible, and covered with serpents, dragons, griffins, and other terrible creatures.

In some places, as at Mundesh, and about Ahmednagar, the Ramoossies are of a more peaceable and industrious character, and many of them have become regular cultivators. But this is not the case with the majority of the tribe, who are of a hardy and enterprising disposition, delighting in an idle and roving life; going about with guns and snares, occasionally destroying tigers, and more frequently killing deer, wild boars, ducks, hares, and partridges, on which they subsist themselves, and when in the neighbourhood of a market, dispose of to such castes as have few prejudices regarding food. European gentlemen residing at Poona employ them as game-killers; and from their peculiar habits find them a valuable aid in procuring a provision of a favourite article of consumption. In such modes of life, the hardy disposition of the Ramoossies may find employment without a resort to violence and outrage, which it may not be too much to hope will gradually yield, throughout India, to regular government and the spread of information.

QUANTITY OF AIR EMPLOYED IN BREATHING.

(From Vol. II. of Dr. Southwood Smith's 'Philosophy of Health.')

The quantity of air capable of being received into the lungs of an adult man, in sound health, at an inspiration, is determined with correctness by an instrument constructed by Mr. Green, analagous to one suggested by Mr. Abernethy. It consists of a tin trough, about a foot square, and six inches deep, three parts of which are filled with water. Into this trough is placed a three-gallon glass jar, open at the bottom, and graduated at the side into pints, half-pints, &c. To the upper end of the jar a flexible tube is affixed, having at its connexion a stop-cock. The lungs being emptied, as in the ordinary action of expiration, and the mouth applied to the end of the flexible tube, the nostrils being closed by the pressure of the fingers, the air is drawn out of the jar into the lungs by the ordinary action of inspiration. When as much air is thus drawn into the lungs as the air vesicles will hold, the stop-cock is closed, and the quantity of air inspired is ascertained by the rise of the water, the level of the water corresponding with the indications marked on the side of the jar.

The quantity of air which a person by a voluntary effort can inspire at one time is found, as might have been anticipated, to be different in every different individual. These varieties depend, among other causes, on the greater or less development of the trunk, on the presence or absence of disease in the chest, on the degree in which the lung is emptied of air by expiration previously to inspiration, and on the energy of the inspiratory effort. The greatest volume of air hitherto found to have been received by the lung, on the most powerful inspiration, is nine pints and a quarter. The average quantity which the lungs are capable of receiving in persons in good health, and free from the accumulation of fat about the chest, appears to be from five to seven pints. The latter is about the average quantity capable of being inspired by public singers.

But these measurements relate to the greatest volume of air which the lungs are capable of receiving, on the most forcible inspiration which it is possible to make after they have been emptied by forcible expiration, and consequently express the quantity received in extraordinary, not in ordinary inspiration. The quantity received at an inspiration easy, natural, and free from any great effort, may be two pints and a half; but the quantity received at an ordinary inspiration, made without any effort at all, is, according to former observations which referred to Winchester measure, about one pint.

The quantity of air expelled from the lung by an ordinary expiration is probably a very little less than that received by an ordinary inspiration.

No one is able by a voluntary effort to expel the whole contents of the lungs. Observation and experiment lead to the conclusion that the lungs, when moderately distended, contain at a medium about twelve pints of air. As one pint is inhaled at an ordinary inspiration, and somewhat less than the same volume is expelled at an ordinary expiration, there remain present in the lungs, at a minimum, eleven pints of air. There is one act of respiration to four pulsations of the heart; and, as in the ordinary state of health there are seventy-two pulsations, so there are eighteen respirations in a minute, or 25,920 in the twenty-four hours.

About two ounces of blood are received by the heart at each dilation of the auricles; about the same quantity is expelled from it at each contraction of its ventricles; consequently, as the heart dilates and contracts seventy-two times in a minute, it sends thus often to the lungs, there to be acted upon by the air, two ounces of blood. It is estimated by Haller that 10,527 grains of blood occupy the same space as 10,000 grains of water; so that if one cubic inch of water weigh 253 grains, the same bulk of blood will weigh 266½ grains.

It is ordinarily estimated that on an average one circuit of the blood is performed in 150 seconds; but that the quantity of air always present in the lungs contains precisely a sufficient quantity of oxygen to oxygenate the blood, while flowing at the ordinary rate of 72 contractions of the heart per minute, for the exact space of 160 seconds. It is therefore highly probable that this interval of time, 160 seconds, is the exact period in which the blood performs one circuit, and not 150 seconds, as former observations had assigned. If this be so, then 540 circuits are performed in the twenty-four hours; that is, there are three complete circulations of the blood through the body in every eight minutes of time.

But it has been shown that the weight of the blood is to that of water as 1.0527 is to unity, and that consequently 10,527 grains of blood are in volume the same as 10,000 grains of water.

From this it results that if in the human adult two ounces of blood are propelled into the lungs at each contraction of the heart, that is, 72 times in a minute, there are in the whole body precisely 384 ounces, or 24 pounds avoirdupois, which measure 692.0657 cubic inches, or within one cubic inch of 20 imperial pints, which measure 693.1847 cubic inches.

By an elaborate series of calculations from these data Mr. Finlaison has deduced the following general results:—

1. As there are four pulsations to one respiration, there are eight ounces of blood, measuring 14.418 cubic inches, presented to 10.5843 grains of air, measuring 34.24105 cubic inches.

2. The whole contents of the lungs is equal to a volume of very nearly 411 cubic inches full of air, weighing 127 grains, of which 29.18132 grains are oxygen.

3. In the space of five-sixth parts of one second of time, two ounces, or 960 grains weight of blood, measuring $3\frac{2}{5}$, or 3.60451 cubic inches, are presented for aëration.

4. Therefore the air contained in the lungs is 114 times the bulk of the blood presented, while the weight of the blood so presented is $7\frac{1}{2}$ times as great as the weight of the air contained.

5. In one minute of time the fresh air inspired amounts to $616\frac{1}{2}$ cubic inches, or as nearly as may be 18 pints, weighing $190\frac{1}{4}$ grains.

6. In one hour the quantity inspired amounts to $1066\frac{1}{2}$ pints, or 2 hogsheads, 20 gallons, and $10\frac{1}{2}$ pints, weighing $23\frac{3}{4}$ ounces and 31 grains.

7. In one day it amounts to 57 hogsheads, 1 gallon, and $7\frac{1}{2}$ pints, weighing $571\frac{1}{2}$ ounces and 25 grains.

8. To this volume of air there are presented for aëration in one minute of time 144 ounces of blood, in volume $259\frac{1}{2}$ cubic inches, which is within 18 cubic inches of an imperial gallon.

9. In one hour 540 pounds avoirdupois, measuring $449\frac{1}{4}$ pints, or 1 hogshead and $1\frac{1}{4}$ pints;—and

10. In the twenty-four hours, in weight 12,960 pounds; in bulk $10,782\frac{1}{2}$ pints, that is, 24 hogsheads and 4 gallons.

11. Thus, in round numbers, there flow to the human lungs every minute nearly 18 pints of air (besides the 12 pints constantly in the air vesicles), and nearly 8 pints of blood; but in the space of twenty-four hours, upwards of 57 hogsheads of air and 24 hogsheads of blood.

BRITISH FISHERIES.—No. XVI.

The Turbot.

The turbot, brill, sole, flounder, halibut, and several others with which we are less familiar, belong to an order of flat-fish called *pleuronectidæ*, from their swimming sideways. The halibut is the largest of this class; and one specimen was taken in 1828, near the Isle of Man, which weighed 323 lbs.; but it is of inferior value as food. The sole is the smallest of these flat-fish; its average weight being about 2 lbs. or 3 lbs., though Mr. Yarrell mentions one taken on the coast of Cornwall which weighed 9 lbs., and was 26 inches long. The ordinary weight of the turbot is from 5 lbs. to 10 lbs., but some are occasionally taken weighing 30 lbs.; and in 1832 a turbot was taken at Whitby which weighed 196 lbs., and measured six feet across. It must have been a specimen of similar dimensions which puzzled the cooks of Domitian, and the degenerate senators of Rome were assembled to devise the means of bringing it to table. In regard to fish, nature does not seem to be bound by the ordinary rules which regulate the growth of quadrupeds. Although instances do occur of extraordinary bulk, or equally singular diminutiveness in them, yet this departure from the ordinary standard of their kind is far less irregular than in fishes; and an ox, or a sheep, six times larger than their ordinarily largest size has never been witnessed.

The turbot is taken on nearly all the coasts of Britain. It is found from the north of Scotland to Cornwall. In Ireland it is chiefly confined to the south-western coasts. It has, however, its favourite haunts, where it is found in greater abundance and perfection than other places. The sand-banks between Dover and the French coast, and those between the English and Dutch coasts, which extend in a line parallel to the eastern shores of Britain, are the most valuable fishing-grounds; and the coast from the North Foreland to the Land's End also abounds with this much-esteemed fish. The turbot does not frequent the coast-line of the United States, and with us it is less abundant at the Orkneys than on the Yorkshire and other shores still further south.

As the turbot does not possess the power of rapid motion, it would be liable to speedy extermination by its numerous enemies were it not so formed and endowed as to render it quick in perceiving danger; and it is also guarded by its habits, which occasion it constantly to be near the bottom, and also by its colour; for while one-half of the fish is nearly white, the other half approaches to the muddy colour of that part of the element in which it resides. The position of the eyes is also singularly adapted for securing its safety. They are not placed on each side of the head, but only on that side which is uppermost when it is in motion. The turbot is most active in the night-time, when perhaps its enemies are less vigilant; and in the day-time it lies at the bottom, with its dark side uppermost, and is consequently difficult to be distinguished. It is said that when it is apprehensive of danger it will remain perfectly still. Man is probably its most active enemy. Great care is necessary in having a suitable bait; for though voracious, it is delicate in its choice of food. A piece of herring or haddock is commonly used for a bait, but if it has been twelve hours out of the water, though not tainted, turbot will not take it. Many years ago, and perhaps they still do so, the Dutch purchased of the Thames fishermen the lesser lamprey for turbot bait to the value of 700*l.* a-year. The Scarborough fishermen were accustomed to obtain a supply by land carriage from the river Wharf, a distance of about sixty miles.

The fishery is carried on both with lines and by trawling. The former is the most general mode pursued on the north-eastern coast, and trawling is practised to a greater extent on the south-western coasts. Mr. Travis, a surgeon who resided at Scarborough, communicated to Mr. Pennant the mode practised by the fishermen of that place. This account will be found in the 'British Zoology,' and is in substance as follows:—Each person is provided with three lines, which are fairly coiled upon a flat oblong piece of wicker-work; the hooks being baited, and placed very

regularly in the centre of the coil. Each line is furnished with fourteen score of hooks, at the distance of six feet two inches from each other. The hooks are fastened to the lines upon 'sheads' of twisted horse-hair, twenty-seven inches in length. When fishing, there are always three men in each coble, and consequently nine of these lines are fastened together, and used as one line, extending in length nearly three miles, and furnished with 2520 hooks. An anchor and a buoy are fixed at the first end of the line, and one more of each at the end of each man's lines; in all, four anchors, which are commonly perforated stones, and four buoys made of leather or cork. The line is always laid across the current, and remains upon the ground about six hours, as it can only be shot or hauled at the turn of the tide. The rapidity of the tide on this coast prevents the use of hand-lines; and therefore two of the men commonly wrap themselves in a sail and sleep while the other keeps a sharp look-out, for fear of being run down by ships, and to observe the weather. The coble is about one ton burden, rather more than twenty feet long, extreme breadth five feet, and it is rowed with three pairs of oars. A larger description of boat is also used in the Scarborough turbot fishery. It is forty feet long, fifteen feet broad, and of twenty-five tons burden, and is called the 'five-men boat,' though usually navigated by six men and a boy; but one of the men is hired to cook, and does not share in the profits with the other five. Two cobles are taken on board, and when they reach the fishing ground they anchor and proceed to fish in the cobles, and being provided with a double set of lines, they haul one and shoot another every turn of the tide. They generally run into harbour twice a-week to deliver their fish. Such is the account given sixty years ago by Mr. Travis, and it does not appear from Mr. Yarrell's recent work on British Fishes that any material change has taken place. The practice varies a little on different parts of the coast, but so it did at the former period.

The Dutch engage with great success in the turbot fishery, but London is their principal market. A preference is given to Dutch turbot, which it deserves to some extent. The flesh on the dark-coloured side is considered as the best, and the Dutch turbot are of a darker hue than those obtained on some parts of our own coast; but those taken on the north-eastern coast of England are equal to the Dutch in this respect, while those which the south-western coasts produce are lighter. Instances now and then occur of turbot which are dark-coloured on both sides. Mr. Barrow says that the Dutch draw about 80,000*l.* a-year for the supply of the London market with turbot; and by Mr. Yarrell it is stated that one-fourth of the whole quantity of turbot brought to Billingsgate is supplied by the Dutch. A large number of turbot are bought at sea of the Dutch fishermen, and brought to London. The French fishermen also sell many at sea to English fishermen. When the Dutch fishermen come into our market, they pay for each boat a duty of 6*l.* Each boat brings from 100 to 150 turbot. Bath and Exeter are the two great markets for the sale of turbot caught on the western coast, but even a portion of the supply from this quarter is brought to London by land carriage. The number of turbot sold at Billingsgate market is believed to be about 100,000 a-year. Being justly regarded as one of the greatest luxuries of the table, turbot always bear a high price; and occasionally, when the supply is small, prices rise to an extravagant height. The fishmongers at the west end of London take off by far the greatest bulk of each day's arrivals.

[Fishing-boats, off Scarborough.]

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